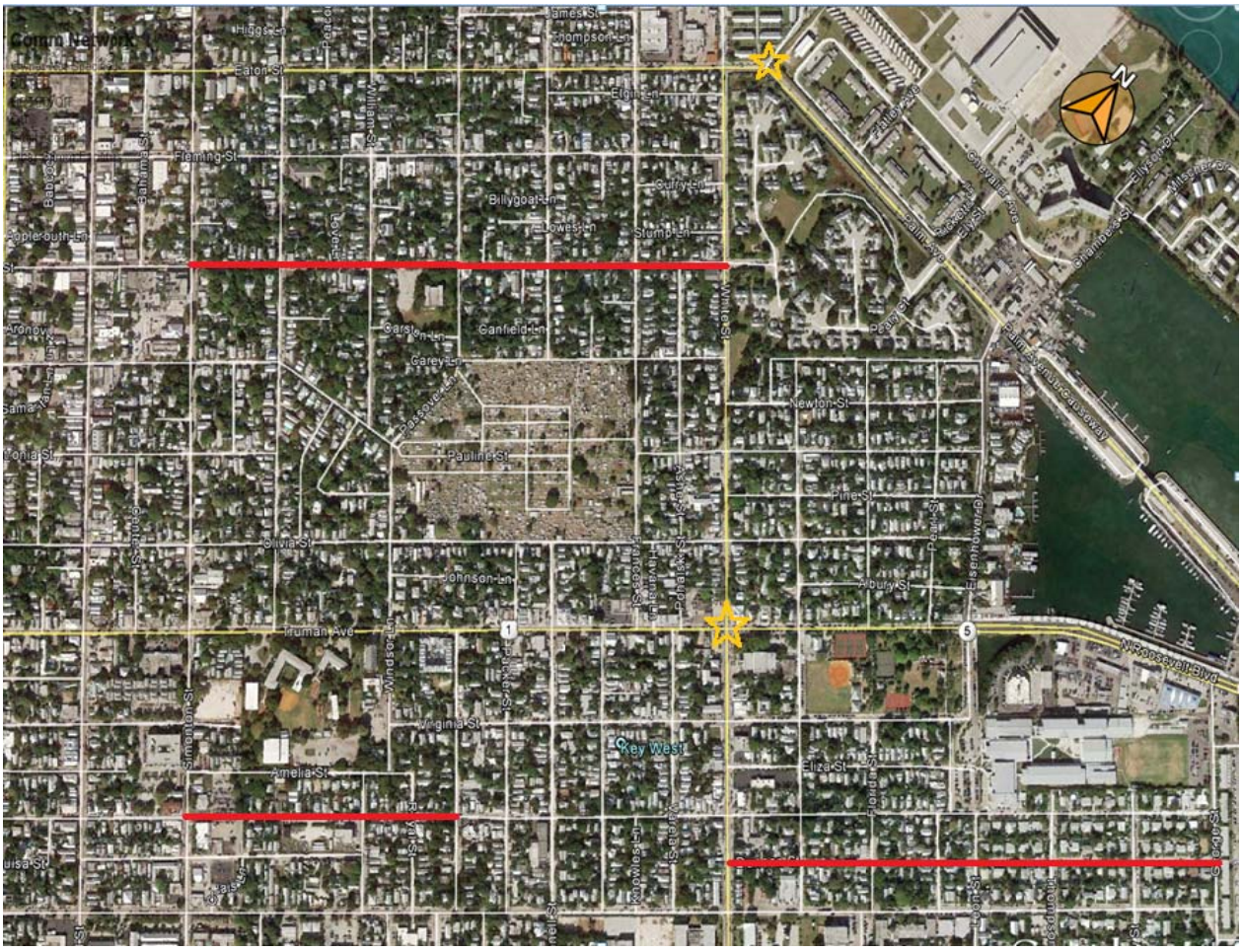
CITY OF KEY WEST QUALITATIVE ASSESSMENT



Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS

JUNE 2015

EXECUTIVE SUMMARY

Calvin, Giordano and Associates, Inc. was retained by the *City of Key West* to perform a Traffic Qualitative Assessment for several requests/concerns regarding traffic within Old Town that have been received by the City's Engineering Services.

As part of our evaluation several locations and corridors were reviewed and analyzed to implement traffic calming opportunities, all-way stop sign installations, and improvements at several signalized intersections.

It should be noted that data was not collected as part of this effort; and any recommendations made as part of this document are based on engineering judgement and field observations.

A field review was conducted on Monday May 11, 2015 at multiple locations, further explained in this document, to observe vehicular, pedestrian, bicyclists, and tourists / visitors' behaviors.

Based on the results of our efforts, and observations made from our field review, Calvin Giordano & Associates has provided several recommendations utilizing the methodology included in the 2009 Manual of Uniform Traffic Control Devices, 2011 FDOT Florida Green Book, and the 2010 Highway Capacity Manual to mitigate any potential safety and operational deficiencies.

This document summarizes the following general and specific items

1 Citywide Sight Distance Restrictions
2 Citywide Signage Issues
3 Duncan Street Evaluation (from White Street to George Street)
4 Catherine Street Evaluation (from Simonton Street to Margaret Street)
5 Southard Street Evaluation (from Simonton Street to White Street)
6 Eaton Street and White Street Intersection Evaluation
7 White Street and Truman Street Intersection Evaluation

CITYWIDE SIGHT DISTANCE RESTRICTIONS

Prepared for:
City of Key West

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS

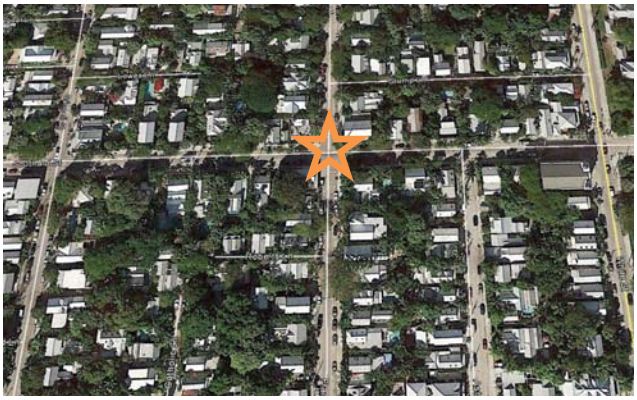
JUNE 2015

1.0 INTRODUCTION

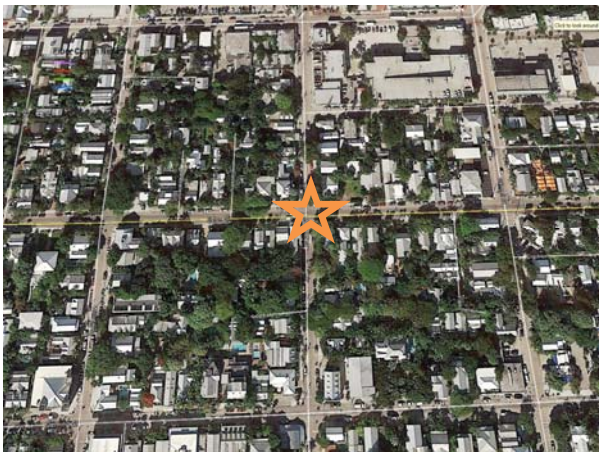
Calvin, Giordano and Associates Inc. (CGA) was retained by the City of Key West to complete qualitative assessments to mitigate several concerns throughout the City. As part of theses assessments, field reviews were completed by CGA traffic engineers on Monday May 11, 2015. During the process of driving between the respective locations, several sight distance issues were observed at several two-way stop controlled intersections. This memorandum documents some of the observed sight distance issues.

Fleming Street and White Street (Looking West)

Frances Street and Southard Street (Looking South)



Margaret Street and Eaton Street (Looking West)



Margaret Street and Eaton Street (Looking East)

2.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the observations made in the field, the following recommendation is made

- Complete a citywide sight distance evaluation for select two-way stop controlled intersections to determine the need for parking restrictions, converting some of the intersections to All-Way Stop control, and/or other safety mitigation measures.

CITYWIDE SIGNAGE EVALUATION

Prepared for:
City of Key West

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS℠

JUNE 2015

1.0 INTRODUCTION

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete qualitative assessments to mitigate several concerns throughout the City. As part of these evaluations, a field review was completed on Monday May 11, 2015. During the process of visiting the respective locations, the absence of posted speed limit signs around some of the main corridors within Old Town and informational way finding signs throughout the City were observed. The City of Key West attracts new tourists from all over the world due to its tropical climate, points of interest, and many festivals that take place throughout the entire year. Educating new visitors and making them aware of their surroundings via way finding signage will benefit the community and improve the general safety along these corridors.

The lettering on this informational signs is small and can be easily missed by drivers.

2.0 CONCLUSIONS AND RECOMMENDATIONS

Due to the City's high volume of pedestrian and bicyclist traffic, vehicles need to have enough way finding to travel safely along the City of Key West road corridors. Based on the observations made in the field, the following recommendations are made:

- The City should consider installing regulatory speed limits signs along various corridors within Old Town to advise the traveling public of the City's regulatory speed,
- The City should consider installing visible way finding informational signs for the traveling public in areas that provide main entrances to Old Town Central Business District, e.g. Palm Avenue, Flagler Avenue, and Truman Avenue(US-1). One key element of the distraction that the traveling public experiences is the lack of concise and

visible information via way finding signs regarding the key points of interest located in Old Town Central Business District.

- Relocate existing informational signs wherever on-street parking is NOT provided so they will be closer to the driver's line of sight.

DUNCAN STREET

Prepared for:
City of Key West

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS

JUNE 2015

1.0 INTRODUCTION

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete a qualitative assessment of traffic conditions along Duncan Street from White Street to George Street. The assessment was initiated as a result of concerns about the suitability of the roadway width to accommodate two-way traffic. This report summarizes the field observations and potential alternatives to mitigate any potential safety and operational issues identified in the field. It should be noted that data was not collected as part of this effort; any recommendations made as part of this report are based on engineering judgement and observations made in the field.

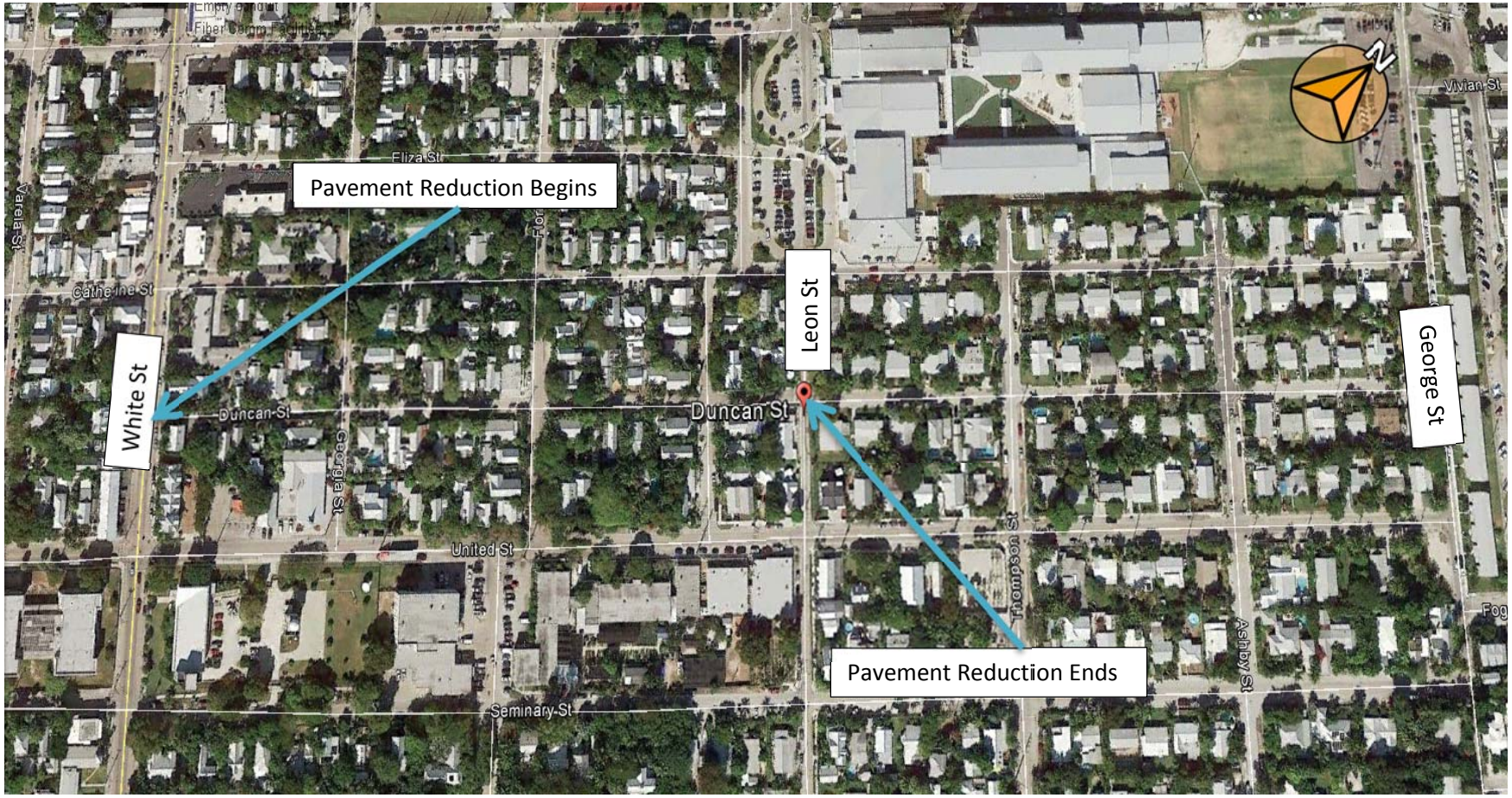
2.0 EXISTING CONDITIONS

Duncan Street is a two-lane undivided local road with a posted speed limit of 25 MPH.

Between the limits of this study, the width of the travelway along Duncan Street varies between 15’ 7” and 21’; the different segment widths along Duncan Street are presented in **Table 1**.

Table 1: Pavement Width along Duncan Street

Duncan Street		
From	***To***	***Pavement Width***
White Street	Georgia Street	15' 7"
Georgia Street	Florida Street	15' 8"
Florida Street	Pearl Street	19' 3"
Pearl Street	Leon Street (South Leg)	16' 2"
Leon Street (South Leg)	Thompson Street (North Leg)	21' 0"
Thompson Street (South Leg)	George Street	20' 0"



Duncan Street from White Street to George Street

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS

JUNE 2015

3.0 FIELD OBSERVATIONS

A field review was conducted at the study location on Monday, May 11, 2015 along Duncan Street. During the field review, several discrepancies were noted concerning the relatively narrow travel way and fluctuations in pavement width throughout the corridor. Some of the observations made in the field and pictures taken during the field review are provided below.

Field measurements at Duncan Street and White Street. (Looking South) Total Pavement width: 15 feet 7 inches

Reduction in pavement width at Leon Street (South leg, looking North towards Pearl Street)

Sight Distances Restrictions at Duncan Street and Florida Street

4.0 CONCLUSIONS AND RECOMMENDATIONS

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete a qualitative assessment of traffic conditions along Duncan Street from White Street to George Street. The assessment was initiated as a result of concerns about the suitability of the roadway width to accommodate two-way traffic.

Based on the measurements and observations made in the field, the following recommendations are made:

- Convert Duncan Street to a one-way street in the northbound direction. The decision for Duncan Street to flow northbound was based on noted sight distance restrictions at the intersection of Duncan Street and White Street for southbound vehicles
- Along the new one way street corridor, consider providing a designated 5 foot bike lane to accommodate bicycles along the roadway segment

CATHERINE STREET EVALUATION

Prepared for:
City of Key West

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS

JUNE 2015

1.0 INTRODUCTION

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete a Qualitative Assessment of Traffic conditions along Catherine Street from Simonton Street to Margaret Street. The assessment was initiated as a result of numerous citizens' complaints regarding the traveling public speeding on Catherine Street. This report summarizes the field observations and potential alternatives to alleviate the community's concerns.

2.0 EXISTING CONDITIONS

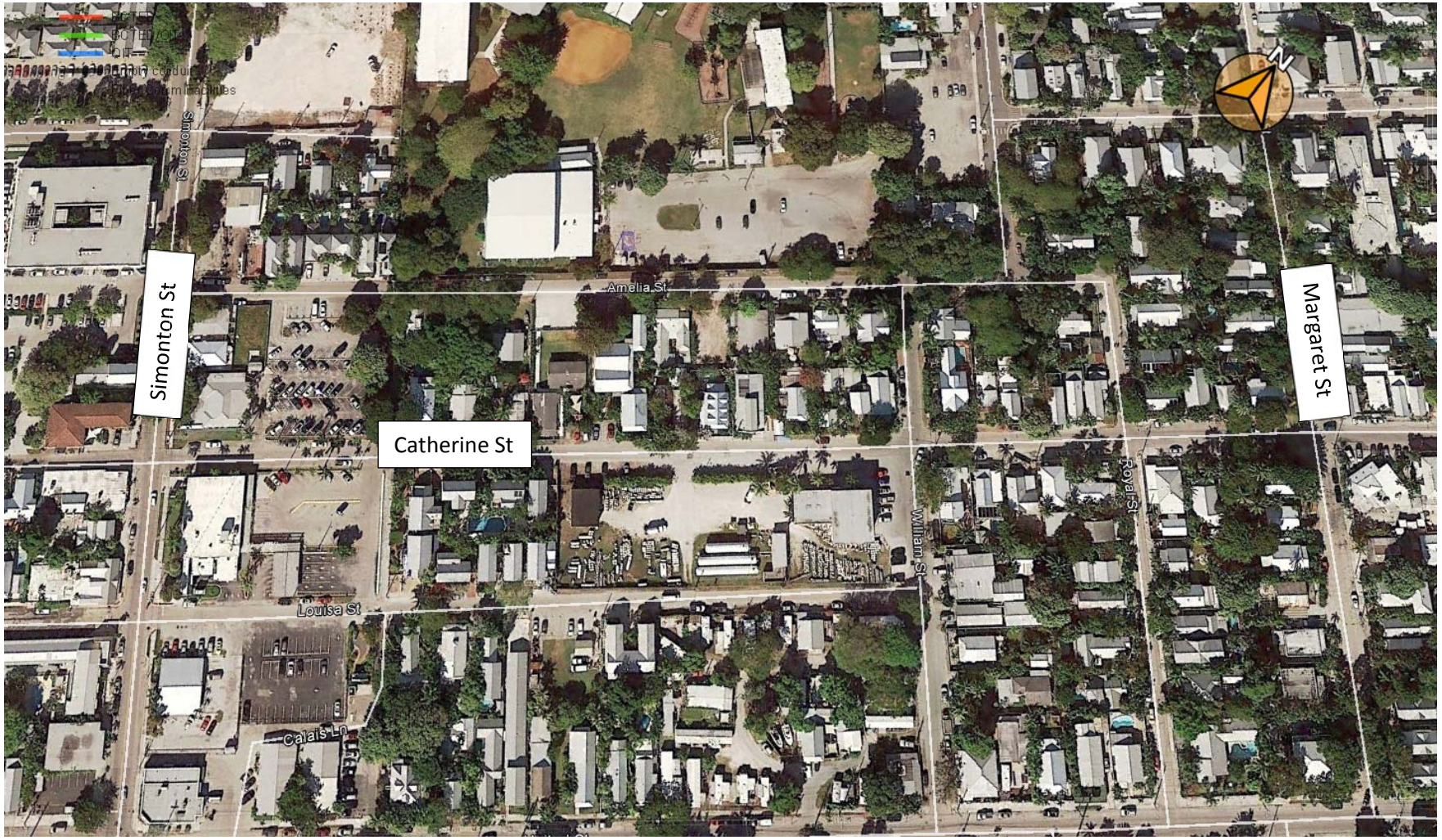
Catherine Street currently operates as a two-lane undivided local road with on street parking on most blocks; there are no posted speed limit signs from Simonton Street to Margaret Street.

Catherine Street at William Street (Looking East)

Catherine Street at William Street

View of existing on street parking and travel way

(Looking West)



Catherine St from Simonton Street to Margaret Street

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS

JUNE 2015

Vehicles park at non-designated areas

3.0 FIELD OBSERVATIONS

A field review was conducted along Catherine Street on Monday, May 11, 2015. During the field review it was observed that no speed limit signs are posted along the corridor between Simonton Street and Margaret Street and that the traveling public drives freely without obeying the regulatory speed limit stipulated in the City's Code of Ordinance.

The width of the pavement on Catherine Street varies from 24' to 25' between the study limits. The parking spaces provided adjacent to the Suburban Propane property outside of the road right of way on Catherine Street provides the traveling public a perception that the travel lanes are much wider allowing vehicles to travel this road corridor at a higher speed.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete a qualitative assessment of traffic conditions along Catherine Street from Simonton Street to Margaret Street. The assessment was initiated as a result of numerous citizens' complaints regarding the traveling public along Catherine Street.

Based on the field observations and data collected in the field, the following recommendations are provided:

- Add posted speed limits for eastbound and westbound traffic on Catherine Street between Simonton Street and Margaret Street.
- Reduce the lane width of each lane to 11 feet, by adding a 6" solid white lane one foot away from the edge of pavement or by widening the existing parking spacing in the areas where on-street parking is provided. Special consideration should be given to differentiating the road from the parking spaces along the Suburban Propane property on William Street. Besides reducing the lane width, it is recommended that discussions be

held with the Suburban Propane Property Owners for repainting their parking spaces and extending the parking lane lines to the edge of pavement. The modifications to the parking spaces and the delineation of the edge of pavement will act as a traffic calming measure due to the narrowing street effect on Catherine Street.

- The possibility of installing a traffic island at the intersection of Catherine Street and William Street was also evaluated; however, due to the limited right of way and the lateral deflection of Catherine Street at William Street, some of the traffic movements will need to be restricted. It is recommended that traffic data be collected at this intersection during the highest season peak hour to identify the movements with less demand and assure that no major left or through movements are restricted after installation. By restricting some of the movements, the adjacent parking spaces will need to be re-evaluated and enforced due to the potential conflicts with the turning movements. This option can be assessed in a temporary manner by installing flexible delineators as a pilot project for a certain period of time. After the completion of the pilot project, if the response from the community is positive with respect to the travel speed reduction on Catherine Street, this option can be further evaluated with a more permanent solution such as the installation of a raised concrete island.

SOUTHARD STREET EVALUATION

Prepared for:
City of Key West

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS℠

JUNE 2015

1.0 INTRODUCTION

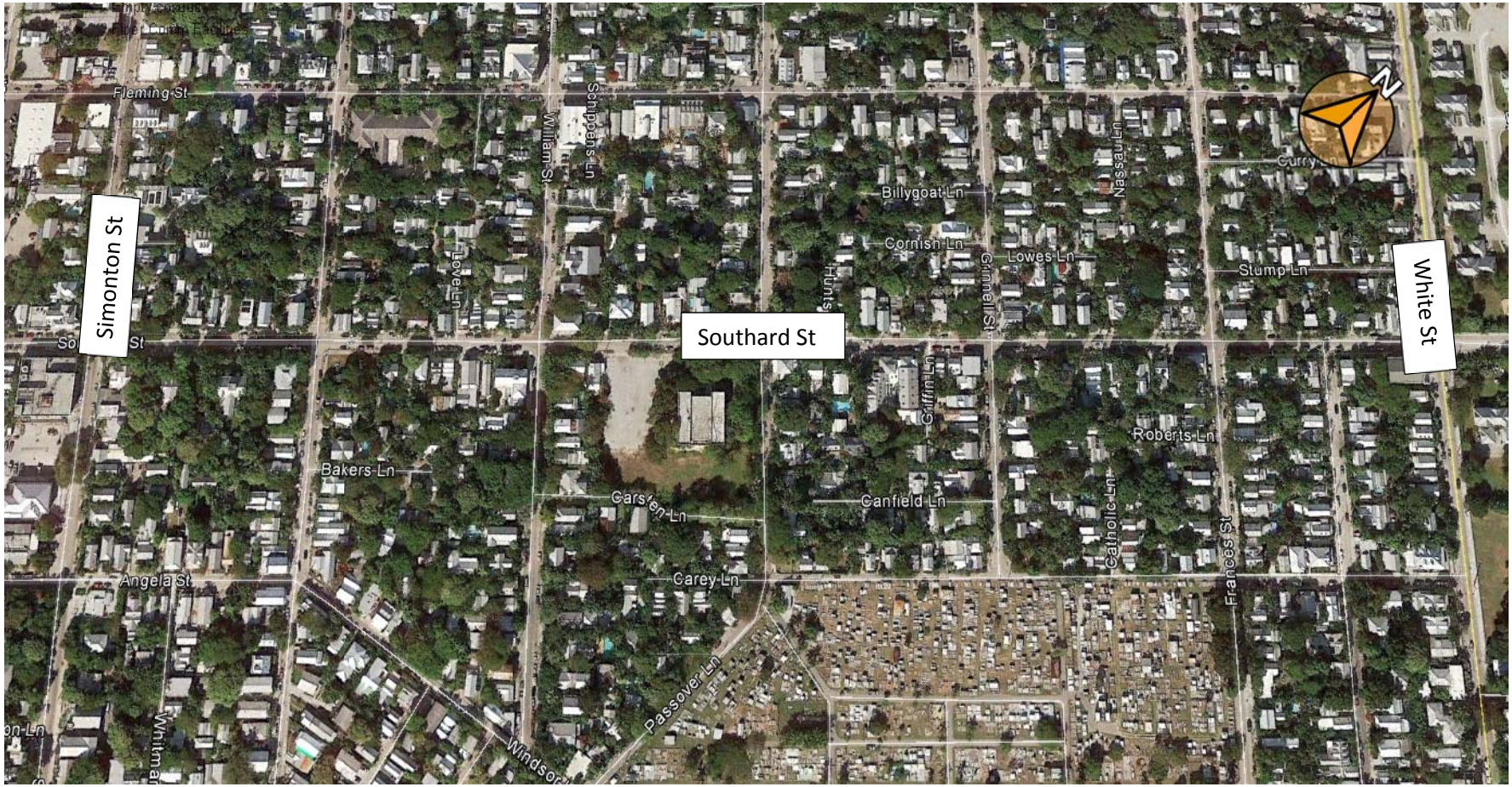
Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete a Qualitative Assessment of existing traffic conditions along Southard Street from White Street to Simonton Street. The assessment was initiated as a result of numerous citizens' complaints regarding the traveling public speeding along Southard Street. This report summarizes the field observations and potential alternatives to alleviate the community's concerns.

2.0 EXISTING CONDITIONS

Southard Street currently operates as a one way one-lane local road with a 5-foot continuous bike lane, and provides on-street parking on both sides of the road. The entire studied corridor from White Street to Simonton Street does not contain any posted speed limit signs.

Southard Street looking westbound

Southard Street and Frances Street
Sight Distance Issues



Southard Street from Simonton Street to White Street

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS

JUNE 2015

Frances Street existing pedestrian crossing at Southard Street

3.0 FIELD OBSERVATIONS

A field review was conducted at the study location on Monday, May 11, 2015 along Southard Street. During the field review it was noticed that the entire corridor does not have any posted speed limit signs and the traveling public drive freely without obeying the regulatory speed limit stipulated in the City's Code of Ordinance.

During the field observations, some sight distances issues were identified at Southard Street and Frances Street.

At the same time the width of the West bound trough lane on Southard Street changes from 12' to 15' approaching the intersection at Simonton Street, which is conducive to vehicles traveling at a higher speed.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete a qualitative assessment of traffic conditions along Southard Street from Simonton Street to White Street. The assessment was initiated as a result of numerous citizens' complaints regarding the traveling public speeding on Southard Street.

Based on the measurements and observations made in the field the following recommendations are made:

- Add posted speed limits signs for West bound traffic on Southard Street between Simonton Street and White Street.
- Complete a sight distance evaluation at the intersection of Southard Street and Frances Street, (currently a two-way stop controlled intersection). Determine the need for parking restrictions along Southard Street and evaluate the need for converting this intersection to an All-Way Stop control.

- Reduce the lane width by increasing the width of the on-street parking on Southard Street at about 210 feet east of the intersection at Southard Street and Simonton Street. The narrower travel lanes will create a traffic calming effect for the traveling public.

EATON STREET AND WHITE STREET INTERSECTION EVALUATION

Prepared for:
City of Key West

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS

JUNE 2015

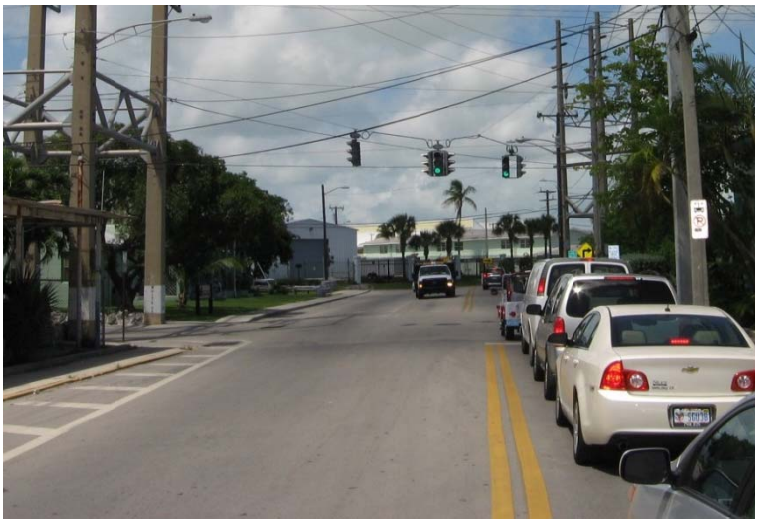
1.0 INTRODUCTION

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete a Qualitative Assessment of Traffic conditions at the intersection of Eaton Street/Palm Avenue and White Street. The assessment was initiated as a result of numerous citizens' complaints regarding the lack of left turn storage and excessive queuing and vehicle back-up. The City has asked Calvin, Giordano and Associates to evaluate the current intersection geometry and operating conditions to increase the storage of the current left turn movement. This report summarizes the field observations and potential alternatives to alleviate the community's concerns.

2.0 EXISTING CONDITIONS

The intersection at Eaton Street/Palm Avenue and White Street is controlled by an existing span wire traffic signal that is supported by strain poles. This current signal head configuration and timing plan does not provide for a dedicated left-turn movement. The signal timing plan for the left turn is permissive only and does not provide for a protected left turn phase.

Looking West on Eaton Street



Looking East on Eaton Street

3.0 FIELD OBSERVATION

A field review was conducted at the signalized intersection on Monday, May 11, 2015. During the field review it was observed that vehicles driving westbound on Palm Avenue after traveling around the horizontal curve tend to occupy the entire 19’ 6” undivided west bound travel lanes. Pavement measurements of the roadway width were taken at three different locations and are summarized in tables 1 and 2 below.

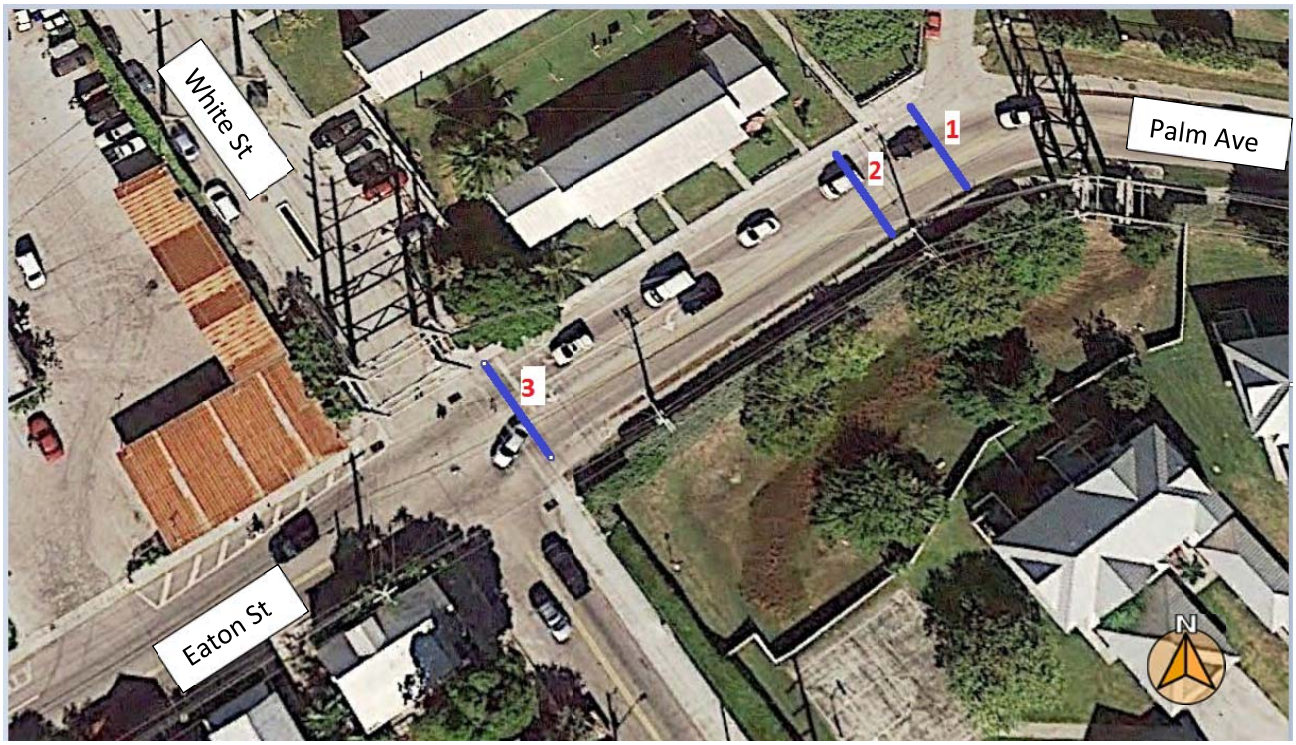


Table 1. Pavement Width

White St and Eaton St / Palm Ave			
Measurement #	***From***	***To***	***Pavement Width***
1	Edge of Pavement	Edge of Pavement	37’9”
2	Edge of Pavement	Edge of Pavement	37’9”
3	Edge of Pavement	Edge of Pavement	38’

Table 2. Lane Width and Assignment

Lane Assignment	***Width***
Bike Lane	6’
West Bound Through Lane	10’
West Bound Left Turn Lane	9’6”
East Bound Through Lane	12’5”

4.0 CONCLUSIONS AND RECOMMENDATIONS

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete a qualitative assessment of traffic conditions at the intersection of Eaton Street/Palm Avenue and White Street. The assessment was initiated as a result of numerous citizens' complaints regarding the lack of left turn storage and excessive queuing and back-up traffic.

Based on the measurements and observations made in the field the following recommendations are made:

- Increase the left turn storage lane from the current 60 feet to approximately 120 feet to better delineate the West bound travel lines after the horizontal curve for vehicles traveling on Palm Avenue. This will improve the geometric layout for vehicular traffic, and will improve vehicle distribution as they approach the horizontal curve. This also should alleviate some of the excessive delays due to the left turn traffic movement.
- Perform a signal timing analysis to evaluate the addition of protected permissive left turn and the possibilities of upgrading and converting the current span-wire phase and strain poles to a mast arm supported intersection which would withstand the 150 MPH wind load required by FDOT.

TRUMAN AVENUE
&
WHITE STREET
INTERSECTION

Prepared for:
City of Key West

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS

JUNE 2015

1.0 INTRODUCTION

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete an evaluation of traffic conditions at the intersection of Truman Avenue/US-1 and White Street. The assessment was initiated as a result of reports of increased traffic congestion for southbound traffic on Truman Avenue. This report summarizes the analysis and potential alternatives to mitigate any identified traffic operational issues.

2.0 EXISTING CONDITIONS

White Street is a two-lane undivided local road with sidewalk on both sides and a posted speed limit of 30 MPH. Truman Avenue/US-1 is a two-lane roadway with sidewalk on both sides and a posted speed limit of 25 MPH. The State of Florida owns and maintains the Truman Avenue/US-1 right-of-way. The intersection's existing configuration is as follows:

Northbound

- One (1) shared left-turn/through/right-turn lane

Southbound

- One (1) shared left-turn/through/right-turn lane

Eastbound

- One (1) dedicated left-turn lane
- One (1) shared through/right-turn lane

Westbound

- One (1) dedicated left-turn lane
- One (1) shared through/right-turn lane

An aerial of the study intersection is presented in **Figure 1**.

Figure 1: Truman Avenue/US-1 and White Street

3.0 DATA COLLECTION

No data was collected as part of this effort; the data utilized as part of this study was collected as part of a previous study completed in 2011 for the City of Key West. As part of the previous study, six-hour Turning Movement Counts (TMCs) were collected at the study intersection on

Thursday March 10, 2011 during the morning, midday and afternoon peak periods. The results of the data collection are summarized in **Table 1**.

Table 1: Turning Movement Count Summary (2011)

Intersection	Eastbound			Westbound			Northbound			Southbound			Intersection Total
	L	T	R	L	T	R	L	T	R	L	T	R	
White Street & Truman Avenue (US-1)	***AM PEAK (8:00 AM-9:00 AM)***												
	54	113	11	68	181	86	15	323	47	44	330	50	**1322**
	MIDDAY PEAK (12:00 PM-1:00 PM)												
	119	191	31	75	192	151	22	515	64	48	487	37	**1932**
	PM PEAK (4:30 PM-5:30 PM)												
	91	228	16	90	165	135	15	521	49	46	480	34	**1870**

4.0 OPERATIONAL ANALYSIS

An analysis of existing conditions was performed for the study intersection using *Synchro* Traffic Analysis software (version 9.0) based on methodologies outlined in the 2010 Highway Capacity Manual. In addition, an additional analysis was completed using *SIMTRAFFIC* Traffic Simulation software (verison 9.0) to evaluate queuing conditions on the approaches to the intersection. The results of the Synchro and SimTraffic analyses are summarized in **Table 2** and **Table 3** respectively. It should be noted that the daily traffic volume peak occurs during midday; therefore, the analysis was completed using the midday traffic volumes.

Table 2: LOS Summary

Intersection	Eastbound (LOS/Delay)	Westbound (LOS/Delay)	Northbound (LOS/Delay)	Southbound (LOS/Delay)	Overall (LOS/Delay)
MIDDAY PEAK (12:00 PM-1:00 PM)					
White Street & Truman Avenue (US-1)	B/16.5	B/19.3	D/49.0	E/61.7	D/40.6

Table 3: SimTraffic Queuing Summary

	Eastbound		Westbound		Northbound	Southbound
	Left Turn	**Through/ Right Turn**	**Left Turn**	**Through/ Right Turn**	**Left Turn /Through/ Right Turn**	**Left Turn /Through/ Right Turn**
MIDDAY PEAK (12:00 PM-1:00 PM)						
Average Queue (feet)	61	110	43	126	528	582
Maximum Queue (feet)	64	118	98	164	701	906

5.0 CONCLUSIONS AND RECOMMENDATIONS

Calvin, Giordano and Associates Inc. was retained by the City of Key West to complete an evaluation of traffic conditions at the intersection of Truman Avenue and White Street. The assessment was initiated as a result of reports of excessive congestion for southbound traffic on Truman Avenue. An analysis of existing conditions was performed for the study intersection using *Synchro* Traffic Analysis software (version 9.0) and *SIMTRAFFIC* Traffic Simulation software (verison 9.0). The analysis showed that the southbound approach of the intersection does not operate at an acceptable Level-of-Service (LOS D or better); in addition, the queue on the southbound approach seems to be comparatively excessive. Based on the results of the analysis, the following recommendation is made

- Consider providing a lead phase for southbound traffic to alleviate some of the identified traffic operational issues. Based on the intended scope of this study, the specifics of the lead phase and the effects of the proposed timing changes on the surrounding roadway network were not evaluated. It is therefore also recommended that a more comprehensive traffic analysis be completed to evaluate the effects of the signal timing changes on the adjacent intersections.

As previously mentioned, Truman Avenue (US-1) is a State of Florida owned and maintained roadway; therefore, close coordination with the Florida Department of Transportation District 6 Traffic Operations Office will be required to implement any signal timing changes.

KMF Traffic Group, LLC
www.kmftraffic.com
1669 SW College St., (772) 221-7971

Manual Traffic Count
31 and White St
Key West, FL
Intersection counted: 3/10/2011

File Name : F-USWH
Site Code : 11-503
Start Date : 3/10/2011
Page No : 1

Groups Printed- Cars/Trucks - Bicycles - Mopeds/Scooters - Delivery Trucks/Buses - Electric Cars - Train Tour - 3 Wheel Bicycles - Tour Vehicles(Trolleys,Ghost tours,etc)

	US1 SB				White St WB				US1 NB				White St EB				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	5	55	7	3	11	11	7	1	7	52	1	4	5	11	8	0	188
07:15 AM	9	61	18	5	12	17	5	3	6	60	1	4	2	13	8	9	233
07:30 AM	7	79	11	2	23	23	11	3	11	71	2	3	3	24	10	5	288
07:45 AM	8	74	6	0	17	36	25	4	19	93	8	1	2	25	17	6	341
Total	29	269	42	10	63	87	48	11	43	276	12	12	12	73	43	20	1050
08:00 AM	14	80	6	3	18	50	21	6	18	92	8	4	1	37	17	5	380
08:15 AM	16	83	17	4	19	48	17	6	13	65	5	8	1	25	11	6	344
08:30 AM	9	59	11	8	32	39	8	4	7	76	1	0	2	16	8	1	281
08:45 AM	11	108	10	2	17	44	22	4	9	90	1	5	7	35	18	5	388
Total	50	330	44	17	86	181	68	20	47	323	15	17	11	113	54	17	1393
*** BREAK ***																	
12:00 PM	14	142	13	8	34	44	20	4	16	142	8	0	4	43	30	7	529
12:15 PM	4	104	11	3	31	54	22	2	17	115	5	2	8	50	27	4	459
12:30 PM	13	125	5	0	44	51	14	0	19	134	7	1	13	51	28	5	510
12:45 PM	6	116	19	0	42	43	19	0	12	124	2	0	6	47	34	0	470
Total	37	487	48	11	151	192	75	6	64	515	22	3	31	191	119	16	1968
*** BREAK ***																	
03:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
04:00 PM	7	120	17	0	33	46	15	0	21	110	5	2	7	47	23	1	454
04:15 PM	15	115	4	9	26	44	23	3	18	102	4	4	5	41	25	3	441
04:30 PM	13	124	16	4	43	33	28	2	21	114	1	1	10	60	19	11	500
04:45 PM	6	109	7	3	30	42	20	4	10	123	6	15	2	49	20	5	451
Total	41	468	44	16	132	165	86	9	70	449	16	22	24	197	87	20	1846
05:00 PM	6	126	12	13	32	39	24	7	6	147	6	1	1	73	22	7	522
05:15 PM	9	121	11	3	30	51	18	2	12	137	2	2	3	46	30	9	486
05:30 PM	12	103	18	4	28	33	13	6	26	128	2	7	9	41	17	3	450
05:45 PM	12	94	5	4	24	42	22	3	29	80	3	15	2	26	16	4	381
Total	39	444	46	24	114	165	77	18	73	492	13	25	15	186	85	23	1839
Grand Total	196	1998	224	78	546	790	354	64	297	2056	78	79	93	760	388	96	8097
Apprch %	7.9	80	9	3.1	31.1	45	20.2	3.6	11.8	81.9	3.1	3.1	7	56.8	29	7.2	
Total %	2.4	24.7	2.8	1	6.7	9.8	4.4	0.8	3.7	25.4	1	1	1.1	9.4	4.8	1.2	
Cars/Trucks	176	1844	220	78	515	643	311	64	283	1950	61	79	78	637	363	95	7397
% Cars/Trucks	89.8	92.3	98.2	100	94.3	81.4	87.9	100	95.3	94.8	78.2	100	83.9	83.8	93.6	99	91.4
Bicycles	11	74	0	0	13	86	15	0	1	42	3	0	0	63	1	1	310
% Bicycles	5.6	3.7	0	0	2.4	10.9	4.2	0	0.3	2	3.8	0	0	8.3	0.3	1	3.8
Mopeds/Scooters	6	66	2	0	12	56	24	0	11	49	13	0	14	48	9	0	310
% Mopeds/Scooters	3.1	3.3	0.9	0	2.2	7.1	6.8	0	3.7	2.4	16.7	0	15.1	6.3	2.3	0	3.8
Delivery Trucks/Buses	3	7	2	0	5	3	2	0	0	6	0	0	1	2	14	0	45
% Delivery Trucks/Buses	1.5	0.4	0.9	0	0.9	0.4	0.6	0	0	0.3	0	0	1.1	0.3	3.6	0	0.6
Electric Cars	0	6	0	0	1	1	2	0	1	2	0	0	0	4	1	0	18
% Electric Cars	0	0.3	0	0	0.2	0.1	0.6	0	0.3	0.1	0	0	0	0.5	0.3	0	0.2
Train Tour	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
% Train Tour	0	0	0	0	0	0	0	0	0	0	1.3	0	0	0	0	0	0
3 Wheel Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Wheel Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tour Vehicles(Trolleys,Ghost tours,etc)	0	1	0	0	0	1	0	0	1	7	0	0	0	6	0	0	16
ur Vehicles(Trolleys,Ghost tours,etc)	0	0.1	0	0	0	0.1	0	0	0.3	0.3	0	0	0	0.8	0	0	0.2

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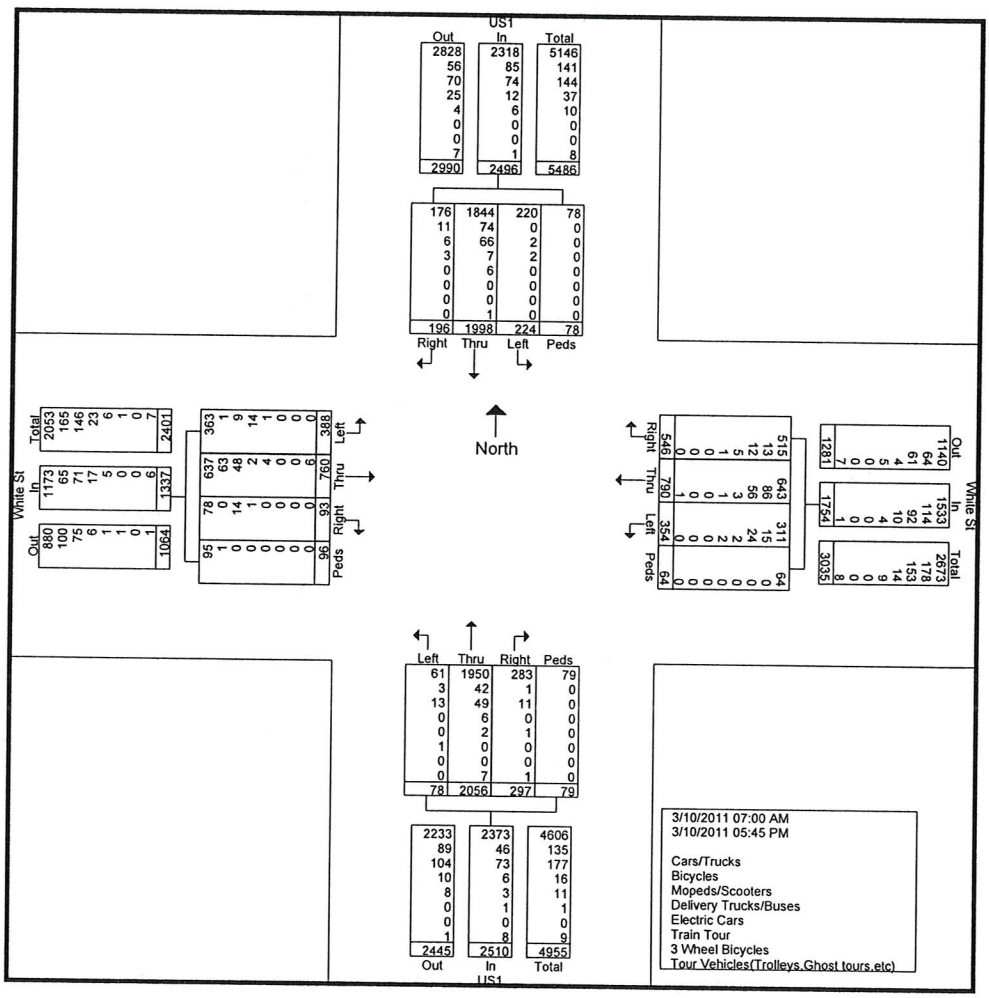
1669 SW College St., (772) 221-7971

Manual Traffic Count
S1 and White St
Key West, FL
Intersection counted: 3/10/2011

File Name : F-USWH
Site Code : 11-503
Start Date : 3/10/2011
Page No : 2



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1669 SW College St., (772) 221-7971

Manual Traffic Count
31 and White St
Key West, FL
Intersection counted: 3/10/2011

File Name : F-USWH
Site Code : 11-503
Start Date : 3/10/2011
Page No : 3

	US1 SB					White St WB					US1 NB					White St EB					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	14	80	6	3	103	18	50	21	6	95	18	92	8	4	122	1	37	17	5	60	380
08:15 AM	16	83	17	4	120	19	48	17	6	90	13	65	5	8	91	1	25	11	6	43	344
08:30 AM	9	59	11	8	87	32	39	8	4	83	7	76	1	0	84	2	16	8	1	27	281
08:45 AM	11	108	10	2	131	17	44	22	4	87	9	90	1	5	105	7	35	18	5	65	388
Total Volume	50	330	44	17	441	86	181	68	20	355	47	323	15	17	402	11	113	54	17	195	1393
% App. Total	11.3	74.8	10	3.9		24.2	51	19.2	5.6		11.7	80.3	3.7	4.2		5.6	57.9	27.7	8.7		
PHF	.781	.764	.647	.531	.842	.672	.905	.773	.833	.934	.653	.878	.469	.531	.824	.393	.764	.750	.708	.750	.898
Cars/Trucks																					
% Cars/Trucks	88.0	90.3	97.7	100	91.2	94.2	80.1	94.1	100	87.3	93.6	95.0	80.0	100	94.5	100	82.3	92.6	100	87.7	90.7
Bicycles	2	17	0	0	19	2	22	2	0	26	1	5	0	0	6	0	12	0	0	12	63
% Bicycles	4.0	5.2	0	0	4.3	2.3	12.2	2.9	0	7.3	2.1	1.5	0	0	1.5	0	10.6	0	0	6.2	4.5
Mopeds/Scooters	2	13	0	0	15	2	11	2	0	15	2	9	3	0	14	0	6	2	0	8	52
% Mopeds/Scooters	4.0	3.9	0	0	3.4	2.3	6.1	2.9	0	4.2	4.3	2.8	20.0	0	3.5	0	5.3	3.7	0	4.1	3.7
Delivery Trucks/Buses	2	2	1	0	5	1	2	0	0	3	0	2	0	0	2	0	1	2	0	3	13
% Delivery Trucks/Buses	4.0	0.6	2.3	0	1.1	1.2	1.1	0	0	0.8	0	0.6	0	0	0.5	0	0.9	3.7	0	1.5	0.9
Electric Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Electric Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0	0.5	0.1
Train Tour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Train Tour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Wheel Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Wheel Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tour Vehicles (Trolleys,Ghost tours,etc)	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Tour Vehicles (Trolleys,Ghost tours,etc)	0	0	0	0	0	0	0.6	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0.1

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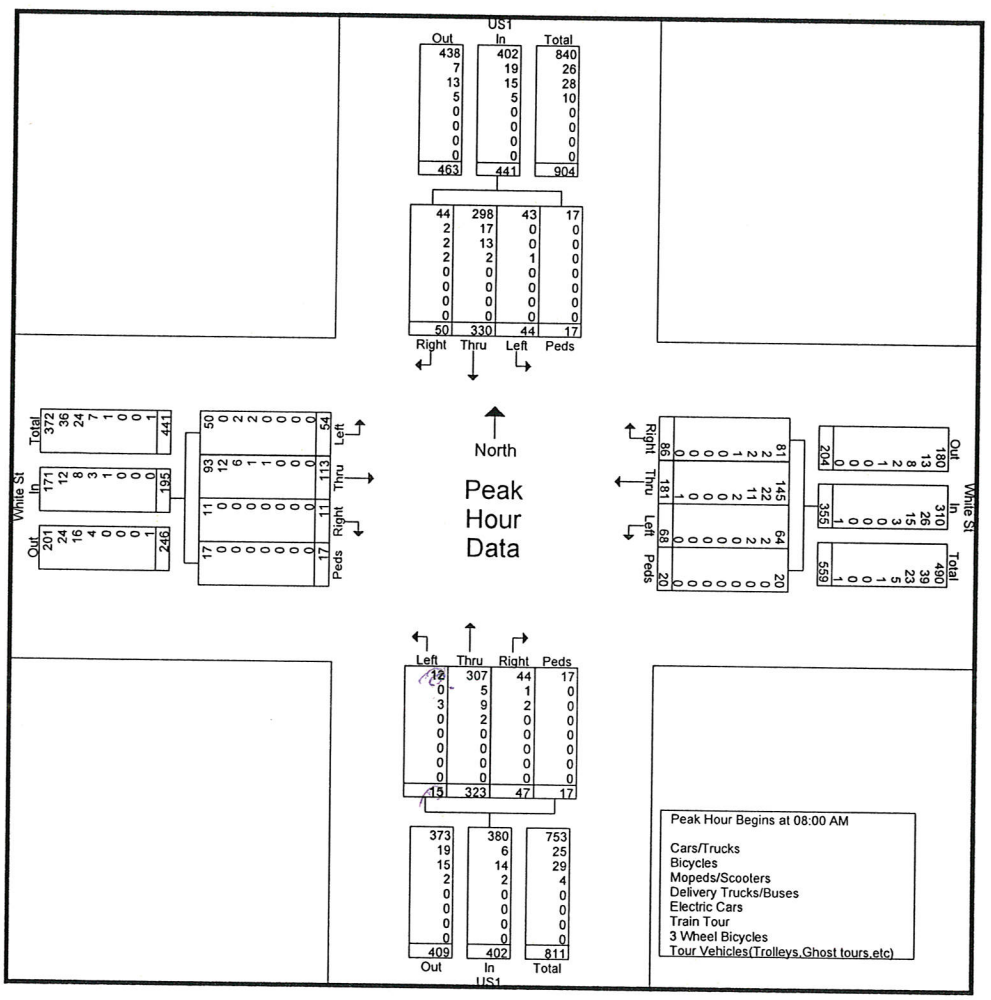
1669 SW College St., (772) 221-7971

Manual Traffic Count
31 and White St
Key West, FL
Intersection counted: 3/10/2011

File Name : F-USWH
Site Code : 11-503
Start Date : 3/10/2011
Page No : 4



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Manual Traffic Count
31 and White St
Key West, FL
Intersection counted: 3/10/2011

File Name : F-USWH
Site Code : 11-503
Start Date : 3/10/2011
Page No : 5

	US1 SB					White St WB					US1 NB					White St EB					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	14	142	13	8	177	34	44	20	4	102	16	142	8	0	166	4	43	30	7	84	529
12:15 PM	4	104	11	3	122	31	54	22	2	109	17	115	5	2	139	8	50	27	4	89	459
12:30 PM	13	125	5	0	143	44	51	14	0	109	19	134	7	1	161	13	51	28	5	97	510
12:45 PM	6	116	19	0	141	42	43	19	0	104	12	124	2	0	138	6	47	34	0	87	470
Total Volume	37	487	48	11	583	151	192	75	6	424	64	515	22	3	604	31	191	119	16	357	1968
% App. Total	6.3	83.5	8.2	1.9		35.6	45.3	17.7	1.4		10.6	85.3	3.6	0.5		8.7	53.5	33.3	4.5		
PHF	.661	.857	.632	.344	.823	.858	.889	.852	.375	.972	.842	.907	.688	.375	.910	.596	.936	.875	.571	.920	.930
Cars/Trucks																					
% Cars/Trucks	94.6	93.2	97.9	100	93.8	94.0	83.3	82.7	100	87.3	92.2	96.3	59.1	100	94.5	90.3	86.4	95.0	100	90.2	92.0
Bicycles	2	11	0	0	13	5	24	5	0	34	0	6	3	0	9	0	11	1	0	12	68
% Bicycles	5.4	2.3	0	0	2.2	3.3	12.5	6.7	0	8.0	0	1.2	13.6	0	1.5	0	5.8	0.8	0	3.4	3.5
Mopeds/Scooters	0	19	0	0	19	1	7	5	0	13	4	7	6	0	17	2	11	1	0	14	63
% Mopeds/Scooters	0	3.9	0	0	3.3	0.7	3.6	6.7	0	3.1	6.3	1.4	27.3	0	2.8	6.5	5.8	0.8	0	3.9	3.2
Delivery Trucks/Buses	0	1	1	0	2	2	1	2	0	5	0	3	0	0	3	1	0	3	0	4	14
% Delivery Trucks/Buses	0	0.2	2.1	0	0.3	1.3	0.5	2.7	0	1.2	0	0.6	0	0	0.5	3.2	0	2.5	0	1.1	0.7
Electric Cars	0	1	0	0	1	1	0	1	0	2	1	0	0	0	1	0	1	1	0	2	6
% Electric Cars	0	0.2	0	0	0.2	0.7	0	1.3	0	0.5	1.6	0	0	0	0.2	0	0.5	0.8	0	0.6	0.3
Train Tour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Train Tour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Wheel Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Wheel Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tour Vehicles (Trolleys,Ghost tours,etc)	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	3	0	0	3	7
% Tour Vehicles (Trolleys,Ghost tours,etc)	0	0.2	0	0	0.2	0	0	0	0	0	0	0.6	0	0	0.5	0	1.6	0	0	0.8	0.4

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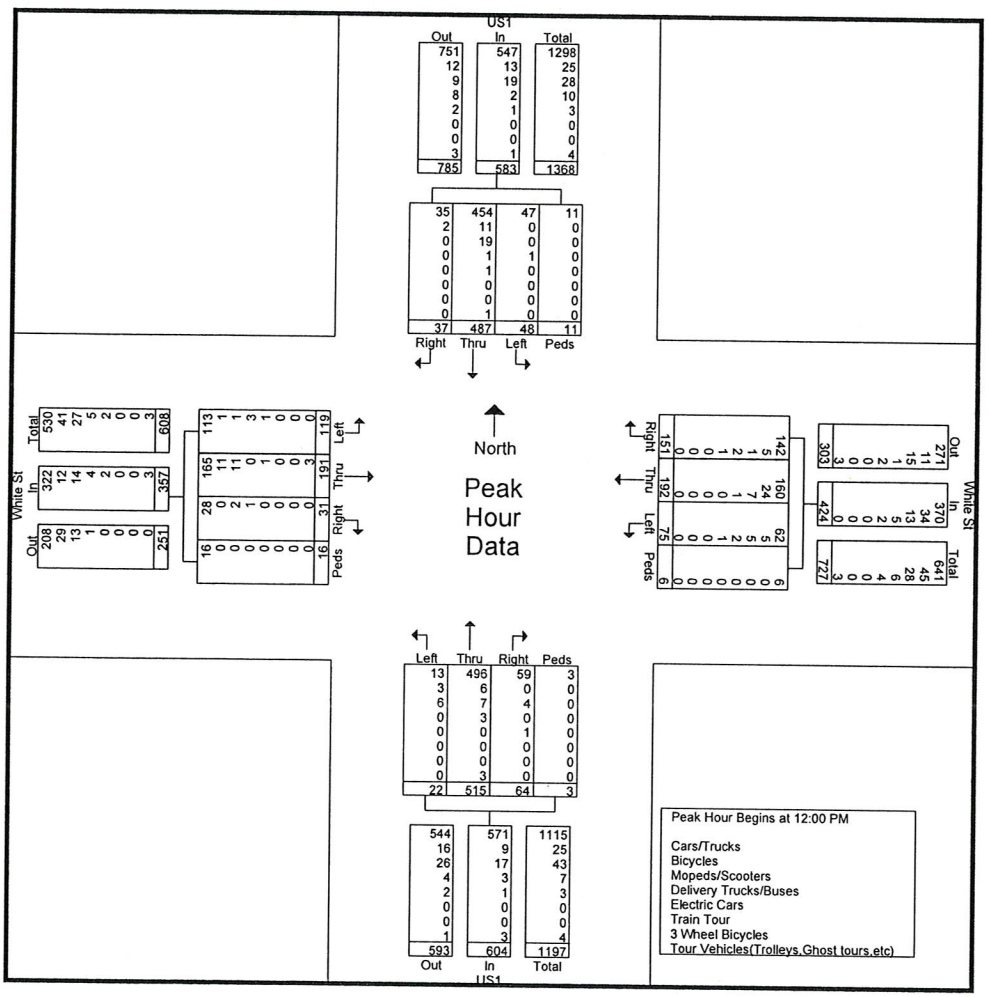
Manual Traffic Count
31 and White St
Key West, FL
Intersection counted: 3/10/2011

File Name : F-USWH
Site Code : 11-503
Start Date : 3/10/2011
Page No : 6



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Manual Traffic Count
31 and White St
Key West, FL
Intersection counted: 3/10/2011

File Name : F-USWH
Site Code : 11-503
Start Date : 3/10/2011
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	US1 SB					White St WB					US1 NB					White St EB					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	13	124	16	4	157	43	33	28	2	106	21	114	1	1	137	10	60	19	11	100	500
04:45 PM	6	109	7	3	125	30	42	20	4	96	10	123	6	15	154	2	49	20	5	76	451
05:00 PM	6	126	12	13	157	32	39	24	7	102	6	147	6	1	160	1	73	22	7	103	522
05:15 PM	9	121	11	3	144	30	51	18	2	101	12	137	2	2	153	3	46	30	9	88	486
Total Volume	34	480	46	23	583	135	165	90	15	405	49	521	15	19	604	16	228	91	32	367	1959
% App. Total	5.8	82.3	7.9	3.9		33.3	40.7	22.2	3.7		8.1	86.3	2.5	3.1		4.4	62.1	24.8	8.7		
PHF	.654	.952	.719	.442	.928	.785	.809	.804	.536	.955	.583	.886	.625	.317	.944	.400	.781	.758	.727	.891	.938
Cars/Trucks																					
% Cars/Trucks	88.2	90.4	100	100	91.4	94.8	83.6	90.0	100	89.4	98.0	95.6	80.0	100	95.5	68.8	82.0	92.3	96.9	85.3	91.1
Bicycles	3	25	0	0	28	4	15	4	0	23	0	8	0	0	8	0	16	0	1	17	76
% Bicycles	8.8	5.2	0	0	4.8	3.0	9.1	4.4	0	5.7	0	1.5	0	0	1.3	0	7.0	0	3.1	4.6	3.9
Mopeds/Scooters	1	18	0	0	19	2	12	4	0	18	1	13	2	0	16	5	20	4	0	29	82
% Mopeds/Scooters	2.9	3.8	0	0	3.3	1.5	7.3	4.4	0	4.4	2.0	2.5	13.3	0	2.6	31.3	8.8	4.4	0	7.9	4.2
Delivery Trucks/Buses	0	2	0	0	2	1	0	0	0	1	0	0	0	0	0	0	1	3	0	4	7
% Delivery Trucks/Buses	0	0.4	0	0	0.3	0.7	0	0	0	0.2	0	0	0	0	0	0	0.4	3.3	0	1.1	0.4
Electric Cars	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2	4
% Electric Cars	0	0.2	0	0	0.2	0	0	1.1	0	0.2	0	0	0	0	0	0	0.9	0	0	0.5	0.2
Train Tour	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
% Train Tour	0	0	0	0	0	0	0	0	0	0	0	0	6.7	0	0.2	0	0	0	0	0	0.1
3 Wheel Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Wheel Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tour Vehicles (Trolleys,Ghost tours,etc)	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	4
% Tour Vehicles (Trolleys,Ghost tours,etc)	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.3	0	0.9	0	0	0.5	0.2

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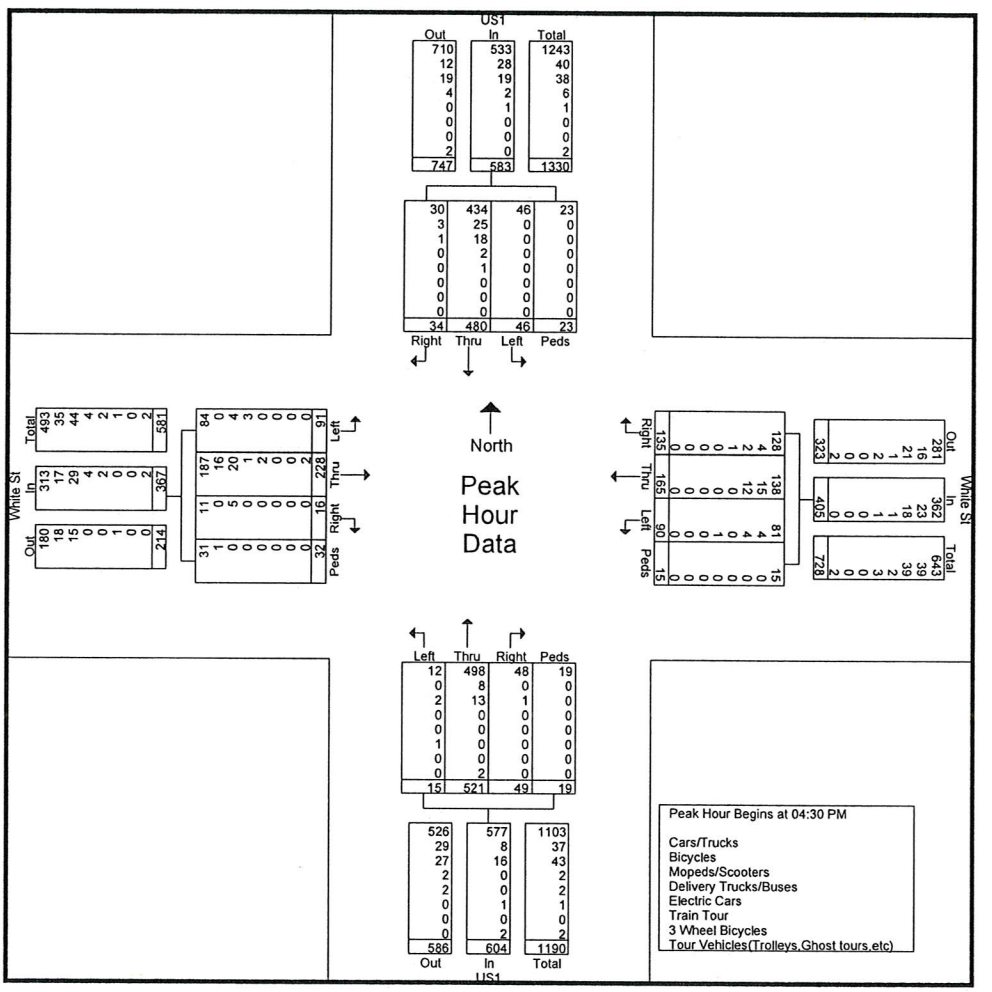
Manual Traffic Count
31 and White St
Key West, FL
Intersection counted: 3/10/2011

File Name : F-USWH
Site Code : 11-503
Start Date : 3/10/2011
Page No : 8



Heavy rain from 12:30 to 1:00PM